

REMARKS

Claims 1 and 5-8 are pending in the instant application. Claims 1, 5, 7 and 8 stand rejected under 35 U.S.C. §102(a) as being anticipated by United States Patent No. 6,340,348 to Krishnan et al. Claim 6 stands rejected under 35 U.S.C. §103(a) over Krishnan et al. Claims 1 and 5-8 are objected to because of informalities. Claim 1 is objected to for insufficient antecedent basis. The claims have been amended. The subject matter of claims 5 and 6 have been incorporated into claim 1 and claims 5 and 6 have been canceled. Applicants respectfully submit that none of the amendments constitute new matter in contravention of 35 U.S.C. §132. Reconsideration is respectfully requested.

Claim Objection

Claims 1 and 5-8 are objected to because of the informality typographical error mM in “A mMethod of...”. Correction has been done and reconsideration and withdrawal of the objection are respectfully requested.

Claim 1 is objected to because there is insufficient antecedent basis for the limitation “the ECG of the heart”. This phrase has now been amended to “an ECG of the heart”. Reconsideration and withdrawal of the objection are respectfully requested.

Claim rejections – 35 U.S.C § 102

Claims 1, 5, 7 and 8 stand rejected under 35 U.S.C § 102(a) as being anticipated by Krishnan et al. (US 6,340,348 B1). This rejection is respectfully traversed.

Krishnan et al. disclose a method for ultrasound contrast agent imaging which can be used for perfusion of blood in cardiac tissue. In this method an ultrasound machine is operated in such a way that high pulse repetition frequency destruction pulses are used to destroy an ultrasound contrast agent that has been administered to a subject and imaging pulses different from the destruction pulses are used for the imaging.

The subject matter of claims 5 and 6 has been included in claim 1, restricting to a method wherein low energy imaging pulses are initiated at or around a T-wave of an ECG of the heart imaging. Krishnan does not disclose a method including such imaging and amended claim 1 is hence novel thereover. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim rejections – 35 USC 103

As described in the introduction to the invention as claimed, methods for cardiac imaging wherein destruction pulses with a high mechanical index destroys the contrast microbubbles in the myocardium are known. It is important to define and refine ultrasound imaging techniques to provide methods that do not result in arrhythmia. The inventors of the instant application have sought a solution to this problem and identified a method of cardiac imaging wherein arrhythmia is minimized. Krishnan et al. disclose that it is possible to trigger the firing of destruction pulses by a physiological signal such as a cardiac (ECG) signal (col. 6, line 27-33), e.g. the R-wave of said ECG signal (col. 7, lines 55-58). When Krishnan mentions triggering at the R-wave this is because that is the time point of the ECG which is most easily recognized. Hence, the triggering mentioned by Krishnan is done for signal processing reasons and not for physiological reasons. ECG-triggered ultrasound imaging is implemented this way on all commercial ultrasound scanners and the ultrasound pulses are fired at a user-determined delay after the R-wave. Accordingly, Krishnan is not directed to a method of triggered ultrasound of the heart wherein active steps are taken to minimize the risk of eliciting cardiac arrhythmia, and does not seek a solution to such problem. Krishnan does not teach or suggest a method wherein triggering of destruction pulses at certain time points could be used in a method to avoid eliciting arrhythmia.

Further, there is no teaching or indication by Krishnan that a triggered ultrasound imaging method, avoiding eliciting arrhythmia should include a destruction pulse that coincides with an R-wave, and in addition imaging pulses initiated at a T-wave.

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Therefore, Applicants respectfully submit that as Krishnan fails to disclose, teach, or suggest a method of the instant invention, the instant claims are patentably distinct thereover. Reconsideration and withdrawal of the rejection are respectfully requested.

In view of the amendments and remarks hereinabove, Applicants respectfully submit that the instant application, including claims 1, 7 and 8, is in condition for allowance. Favorable action thereon is respectfully requested.

Any questions with respect to the foregoing may be directed to Applicants' undersigned counsel at the telephone number below.

Respectfully submitted,

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